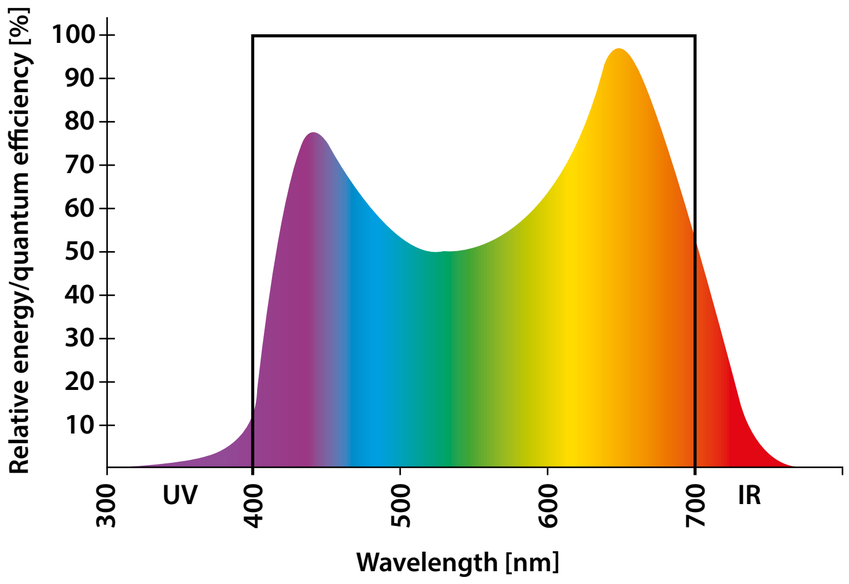
# Lighting for Plants

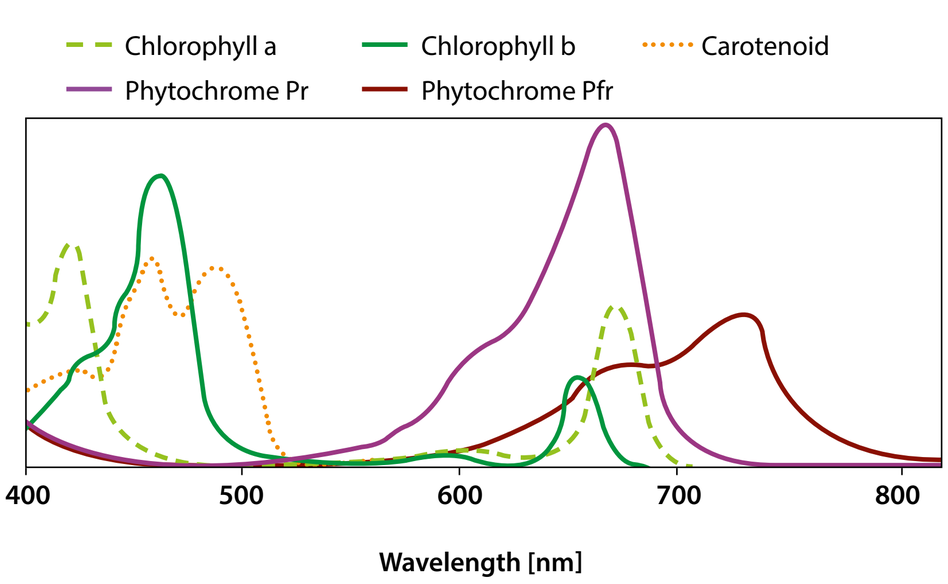
## And the influence of different wavelengths on growth behaviour

**The chief goal of our crop laboratory is to react as flexibly as possible to different plant species and growth requirements, and to adjust them in a controlled manner.**

### PAR (Photosynthetically Active Radiation)



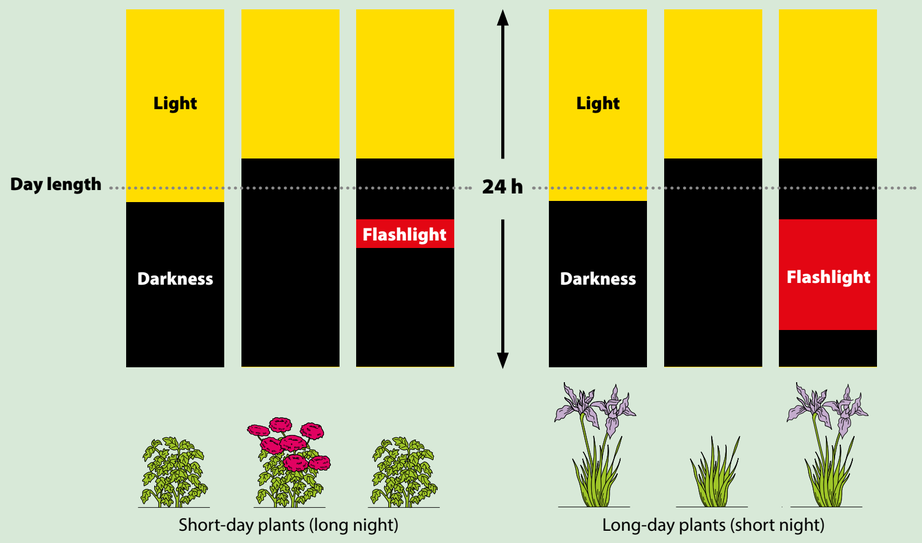

### Plant absorption curves



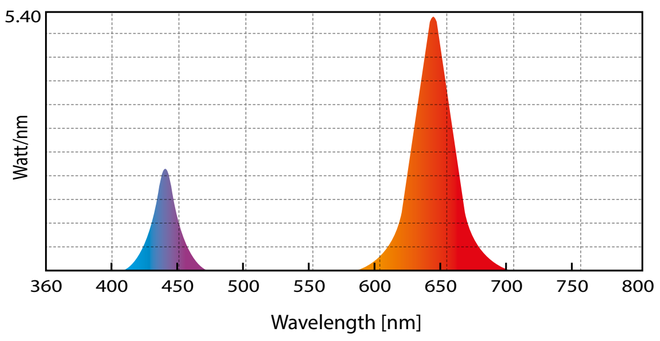

### Wavelengths on different ranges of the illumination spectrum affect plants in different ways:

| Wavelength range [nm] | Photosynthesis | Other effects | Other effects | Other effects |
|---|---|---|---|---|
| 200-280 | | Detrimental | | |
| 280-315 | | Detrimental | | |
| 315-380 | | | | |
| 380-400 | Yes | | | |
| 400-520 | Yes | Vegetative growth | | |
| 520-610 | Little | Vegetative growth | | |
| 610-720 | Yes | Vegetative growth | Flowering | Bud formation |
| 720-1000 | | Germination | Leaf formation and growth | Flowering |
| ≥ 1000 | | Converted into heat | | |

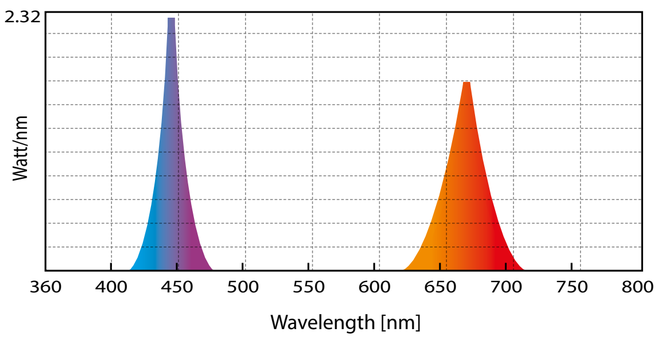
### Controlling flowering by regulating day length with arbitrary light



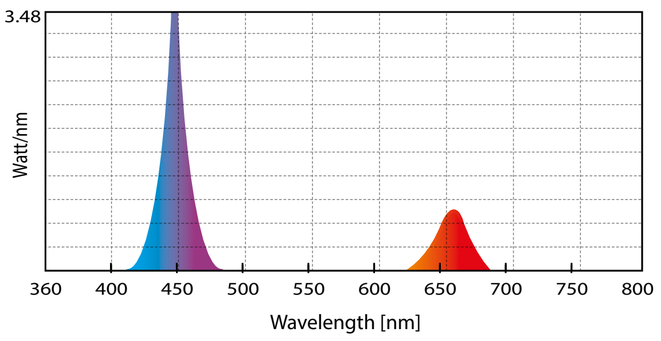

### Horticulture lighting: Example LED lighting conditions for different purposes




| General application - High efficiency | |
|---|---|
| **Wavelength** | **mW ratio** |
| 450 nm | 23% |
| 660 nm | 77% |




| Vegetative growth | |
|---|---|
| **Wavelength** | **mW ratio** |
| 450 nm | 50% |
| 660 nm | 50% |




| Ideal for germination | |
|---|---|
| **Wavelength** | **mW ratio** |
| 450 nm | 75% |
| 660 nm | 25% |